CLAIMS

1. A method of introducing microorganisms into a heap of material for bio-assisted heap leaching comprising:
   a) preparing microorganisms substantially without exopolymers on their external cell walls;
   b) adding microorganisms prepared according to step a) to the heap;
   c) at least one of assisted or un-assisted re-activation of the production of exopolymers on the external cells walls of the microorganisms in the heap.

2. A method as claimed in claim 1 in which step a) includes exposing the microorganisms to a low nutrient environment or starving the microorganisms.

3. A method as claimed in claim 2 in which the microorganisms are starved by limiting the amount of carbon available to the microorganisms.

4. A method as claimed in any one of claims 1 to 3 in which step b) includes one or more of adding microorganisms to the heap during formation thereof, drip irrigation of the heap, sprinkling of the heap, and pressurized irrigation of the heap.

5. A method as claimed in any one of claims 1 to 4 in which the assisted re-activation comprises exposing the microorganisms to a nutrient rich environment.

6. A method as claimed in claim 5 in which the step of exposing the microorganisms to a nutrient rich environment includes one or more of:

a) embedding solid nutrients in the heap;

b) irrigating the heap with a nutrient rich solution;

c) aerating the heap with nutrient rich gas; and

d) aerating the heap with a gas enriched in carbon dioxide.

7. A method as claimed in claim 6 in which includes the step of embedding a carbon source in the heap.

8. A method as claimed in claim 7 in which the carbon source comprises carbonate.

9. A method as claimed in claim 6 in which the solid nutrients of step a) comprises slow release nutrients.

10. A method as claimed in claim 6 in which the gas of the step c) is enriched with one or more of a nutrient aerosol or ammonia.

11. A method as claimed in claim 1 in which the un-assisted re-activation includes re-activation due to one or more of prevalent conditions in the heap and natural gas flow through the heap.

12. A method as claimed in claim 11 in which the natural gas includes carbon dioxide.

13. A method substantially as herein described with reference to Example 1.